

*Tech  
Report*

# ANALYTICAL REPORT

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S. Plainfield, NJ

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## Introduction

REAC, in response to ERTC WA # 2-262, provided analytical support for environmental samples collected at the Cornell Dubilier Electronics Site in S. Plainfield, NJ as described in the following table. The support also included QA/QC, data review and the preparation of a report summarizing the analytical methods, results, and the QA/QC results.

The samples were treated with procedures consistent with those described in SOP #1008 and are summarized in the following table:

COC #**	Number of Samples	Sampling Date	Date Received	Matrix	Analysis	Laboratory
03968	4	6/9/97	6/13/97	Vacuum Dust	Pb, Cd	Kiber
03968	14	6/9/97	6/13/97	Concrete Dust	Pb, Cd	Kiber
08342	12	6/5/97	6/6/97	Air	Pb, CD	REAC
08343	12	6/5/97	6/6/97	Air	PCB	REAC
08400	4	6/9/97	6/11/97	Vacuum Dust	PCB	REAC
08400	14	6/9/97	6/11/97	Chip Dust	PCB	REAC

\*\* COC # denotes Chain of Custody number

## Case Narrative

### Lead and Cadmium in Air Package G 250

The data were examined and were found to be acceptable.

### PCB in Air Package G 318

The end of sequence calibration check standard of 6/19/97 exceeded the acceptable QC limits for tetrachloro-m-xylene, decachlorobiphenyl and peaks one and two of Aroclor 1248. The data are not affected.

The end of sequence calibration check standard of 6/19/97 exceeded the acceptable QC limits for all five peaks of Aroclor 1248. The data are not affected

The percent recoveries of the surrogate decachlorobiphenyl exceeded the acceptable QC limits for sample 499 (Field Blank). The data are not affected.

PCB in Dust Package G 441

Because the analyses were run more than 50 days beyond the extraction date, values should be regarded as estimated. Original samples were re-extracted. There is no significant difference in the results.

The continuing calibration check standard CRD3A21A.D exceeded the acceptable QC limit for decachlorobiphenyl (35%). The data are not affected.

The continuing calibration check standard CRD3A01A.D exceeded the acceptable QC limit for decachlorobiphenyl (29%). The data are not affected.

The continuing calibration check standard CRD3A24A.D exceeded the acceptable QC limit for decachlorobiphenyl (34%). The data are not affected.

The end of sequence calibration check CRD3A28A.D exceeded the acceptable QC limits for five peaks of Aroclor 1254. The data are not affected.

Because of the presence of Aroclor 1248 and Aroclor 1254 at ppm concentrations, the samples required high dilutions and the surrogates were not recovered. The data are not affected.

Lead and Cadmium in Dust Package G 290

The data were examined and were found to be acceptable.

## Summary of Abbreviations

AA	Atomic Absorption				
B	The analyte was found in the blank				
BFB	Bromofluorobenzene				
BPQL	Below the Practical Quantitation Limit				
C	Centigrade				
D	(Surrogate Table) this value is from a diluted sample and was not calculated (Result Table) this result was obtained from a diluted sample				
Dioxin	denotes Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans and/or PCDD and PCDF				
CLP	Contract Laboratory Protocol				
COC	Chain of Custody				
CONC	Concentration				
CRDL	Contract Required Detection Limit				
CRQL	Contract Required Quantitation Limit				
DFTPP	Decafluorotriphenylphosphine				
DL	Detection Limit				
E	The value is greater than the highest linear standard and is estimated				
EMPC	Estimated maximum possible concentration				
ICAP	Inductively Coupled Argon Plasma				
ISTD	Internal Standard				
J	The value is below the method detection limit and is estimated				
LCS	Laboratory Control Sample				
LCSD	Laboratory Control Sample Duplicate				
MDL	Method Detection Limit				
SQL	Method Quantitation Limit				
MI	Matrix Interference				
MS	Matrix Spike				
MSD	Matrix Spike Duplicate				
MW	Molecular Weight				
NA	either Not Applicable or Not Available				
NC	Not Calculated				
NR	Not Requested				
NS	Not Spiked				
% D	Percent Difference				
% REC	Percent Recovery				
PQL	Practical Quantitation Limit				
PPBV	Parts per billion by volume				
QL	Quantitation Limit				
RPD	Relative Percent Difference				
RSD	Relative Standard Deviation				
SIM	Selected Ion Mode				
TCLP	Toxic Characteristics Leaching Procedure				
U	Denotes not detected				
m <sup>3</sup>	cubic meter	kg	kilogram	μg	microgram
L	liter	g	gram	pg	picogram
mL	milliliter	mg	milligram		
μL	microliter				
*	denotes a value that exceeds the acceptable QC limit				
	Abbreviations that are specific to a particular table are explained in footnotes on that table				

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## Analytical Procedure for PCBs in Air

### Extraction Procedure

The entire wipe was spiked with a surrogate solution consisting of tetrachloro-m-xylene and decachlorobiphenyl, and was sonicated with hexane. The combined extracts were concentrated to 3.0 mL.

### Gas Chromatographic Analysis

The extract was analyzed for PCBs using simultaneous dual column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-ChemStation. The following conditions were employed:

First Column	DB-608, 30 meter, 0.53mm fused silica capillary, 0.83 $\mu$ m film thickness
Injector Temperature	250° C
Detector Temperature	325° C
Temperature Program	150°C for 1 minute 7°C/min to 265°C 18 min at 265°
Second Column	Rtx-1701, 30 meter, 0.53mm fused silica capillary, 0.50 $\mu$ m film thickness
Injector Temperature	250° C
Detector Temperature	325° C
Temperature Program	150° C for 1 minute 7°C/min to 265°C 18 min at 265°

The gas chromatographs were calibrated using 5 Aroclor 1254 standards at 250, 500, 1000, 2000, and 5000  $\mu$ g/L. The response from each mixture were used to calculate the response factors (RF) of each analyte. The average RF was used to calculate the concentrations of PCB in the samples. Quantification was based on the DB-608 column (signal 1), and identity of the analyte was confirmed using the Rtx-1701 column (signal 2). A fingerprint gas chromatogram was run using each of the seven Aroclor mixtures.

The PCB results, listed in Table 1:1, were calculated from the following formula:

$$C_u = \frac{DF \times A_u \times V_i}{RF_{ave} \times V_i}$$

where

$C_u$  = Concentration of analyte ( $\mu\text{g}/100 \text{ cm}^2$ )  
DF = Dilution Factor  
 $A_u$  = Area or peak height  
 $V_i$  = Volume of sample (mL)  
 $RF_{ave}$  = Average response factor  
 $V_i$  = Volume of extract injected ( $\mu\text{L}$ )

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_u}{\text{total pg injected}}$$

where

$A_u$  = Area or peak height

and

$$RF_{ave} = \frac{RF_1 + \dots + RF_n}{n}$$

where

$n$  = number of samples

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## Analytical Procedure for PCBs in Dust

### Extraction Procedure

The dust samples were extracted by the Soxhlet method. Thirty grams of sample was spiked with a surrogate solution consisting of tetrachloro-m-xylene and decachlorobiphenyl, 30 g anhydrous sodium sulfate and Soxhlet extracted for 16 hours with 300 mL 1:1 hexane: acetone. The extract was concentrated to 5.0 mL.

### Gas Chromatographic Analysis

The extract was analyzed for PCBs using simultaneous dual column injections. The analysis was done on an HP 5890 GC/ECD system, equipped with an HP 7673A automatic sampler, and controlled with an HP-CHEM STATION. The following conditions were employed:

First Column	DB-608, 30 meter, 0.53mm fused silica capillary, 0.83 $\mu$ m film thickness
Injector Temperature	250° C
Detector Temperature	325° C
Temperature Program	150° C for 1 minute 7° C/min to 265° C 18 min at 265°
Second Column	Rtx-1701, 30 meter, 0.53mm fused silica capillary, 0.50 $\mu$ m film thickness
Injector Temperature	250° C
Detector Temperature	325° C
Temperature Program	150° C for 1 minute 17° C/min to 265° C 18 min at 265°

The gas chromatographs were calibrated using 5 PCB standards at 250, 500, 1000, 2000 and 5000  $\mu$ g/L. The results from each mixture were used to calculate the response factor (RF) of each analyte and the average Response Factor was used to calculate the concentration of PCB in the sample. Quantification was based on the DB-608 column (signal 1) and the identity of the analyte was confirmed using the Rtx-1701 column (signal 2). A fingerprint chromatogram was run using each of the seven Aroclor mixtures; calibration curves were run only if a particular Aroclor was found in the sample



The PCB results, listed in Table 1.2, are calculated by using the following formula:

$$C_u = \frac{DF \times A_u \times V_i}{RF_{ave} \times V_i \times W \times D}$$

where

$C_u$  = Concentration of analyte (mg/Kg)  
 $DF$  = Dilution Factor  
 $A_u$  = Area or peak height  
 $V_i$  = Volume of sample (mL)  
 $RF_{ave}$  = Average response factor  
 $V_i$  = Volume of extract injected ( $\mu$ L)  
 $W$  = Weight of sample (g)  
 $D$  = Decimal percent solids

Response Factor calculation:

The RF for each specific analyte is quantitated based on the area response from the continuing calibration check as follows:

$$RF = \frac{A_u}{\text{total pg injected}}$$

where

$A_u$  = Area or peak height

and

$$RF_{ave} = \frac{RF_1 + \dots + RF_n}{n}$$

where

$n$  = number of samples

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## Analytical Procedure for Lead and Cadmium in Air

### Sample Preparation

Each wipe sample was transferred to a clean 100 mL beaker and prepared according to reference method NIOSH 7105. The samples were thoroughly mixed with 5 mL concentrated nitric acid and heated on a hot plate until the volume was reduced to 0.5 mL. Additional nitric acid and hydrogen peroxide were added during heating to complete digestion of the wipe pad. After digestion, the samples were allowed to cool to room temperature, transferred to 25 mL volumetric flasks and diluted to 25 mL with ASTM Type II water. The samples were analyzed for all lead and cadmium, by USEPA SW-846, Method 7000 (Atomic absorption) or Method 6010 (Inductively Coupled Argon Plasma-ICAP) procedures.

A reagent blank, reagent blank spike, media blank and media blank spike were carried through the sample preparation procedure for each analytical batch of samples processed. One matrix spike (MS) and one matrix spike duplicate (MSD) sample (prepared using blank wipes) were also processed for each analytical batch or every 10 samples.

### Analysis and Calculations

The instruments were calibrated and operated according to SW-846, Method 7000/6010 and the manufacturers operating instructions. After calibration, initial calibration verification (ICV), initial calibration blank (ICB) and quality control check standards were run to verify proper calibration. The continuing calibration verification (CCV) and continuing calibration blank (CCB) were run after every ten samples to assure proper operation during sample analysis.

The metal concentrations in solution, in micrograms per liter ( $\mu\text{g/L}$ ) were taken from the read-out systems of the AA and ICAP instruments. The results (in micrograms per wipe,  $\mu\text{g/wipe}$ ) were obtained by externally correcting read-outs for final digestion volume.

Final concentrations, ( $\mu\text{g/wipe}$ ) were given by:

$$\mu\text{g metal/wipe sample} = A \times (V/1000) \times \text{DF}$$

where:

A = Instrument read-out ( $\mu\text{g/L}$ )

V = final volume of processed sample (mL)

DF = Dilution Factor (1.00 for no dilution)

For samples that required dilution to be within the instrument calibration range, DF is given by:

$$\text{DF} = (C+B)/C$$

where:

B = acid blank matrix used for dilution (mL)

C = sample blank aliquot (mL)

The results of the analysis are listed in Table 1.3.

#### **Analytical Procedure for Lead and Cadmium in Dust**

The subcontract laboratory determined the lead and cadmium concentrations in the samples by preparing them according to USEPA Method 3050 and analyzing them according to USEPA Method 6010. Both procedures are found in SW-846. The results of the analysis are listed in Table 1.4.

Table 1.1 Results of the Analysis for PCBs in Air  
WA # 2-262 Cornell Dubilier Electronics

Sample ID Location  Volume (L)	PBLK06069701		00332 Columbia / Back Storage 960		00334 Columbia/ Shelf Mid Work Area 960		00336 Columbia/ 300 Mid Bench Shelf 960		00338 Columbia Storage Bin 1080	
	Conc. µg	MDL µg	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3
AROCLOR 1016	U	0.3	7	2.6	12	2.6	18	5.2	33	4.6
AROCLOR 1221	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5
AROCLOR 1232	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
AROCLOR 1242	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
AROCLOR 1248	U	0.3	2	2.6	5	2.6	6	5.2	12	4.6
AROCLOR 1254	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
AROCLOR 1260	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3

Sample ID Location  Volume (L)	00340 Columbia/ Back Room 960		00342 Columbia/ Pole 20 Back Room 960		00344 Robalo/ Pole Near Breaker 960		00346 Robalo/ Shelf In Side Bay Door 960		00348 Truck Fenceline  960	
	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3	Conc. µg/m3	MDL µg/m3
AROCLOR 1016	10	2.6	16	5.2	3.7	5.2	0.6	0.3	U	0.3
AROCLOR 1221	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5
AROCLOR 1232	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
AROCLOR 1242	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
AROCLOR 1248	5	2.6	7	5.2	2.3	5.2	0.4	0.3	0.2	0.3
AROCLOR 1254	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3
AROCLOR 1260	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3

Sample ID Location  Volume (L)	00350 Roadway Corner 960		09554 Field Blank		09556 Lot Blank	
	Conc. µg/m3	MDL µg/m3	Conc. ng	MDL ng	Conc. ng	MDL ng
AROCLOR 1016	U	0.3	U	250	U	250
AROCLOR 1221	U	0.5	U	500	U	500
AROCLOR 1232	U	0.3	U	250	U	250
AROCLOR 1242	U	0.3	U	250	U	250
AROCLOR 1248	U	0.5	U	250	U	250
AROCLOR 1254	0.2	0.3	U	250	U	250
AROCLOR 1260	U	0.3	U	250	U	250

Table 1.2 Results of the Analysis for PCBs in Dust  
WA # 2-262 Cornell Dubilier Electronics  
Based on dry weight

Client ID	SBLK06119701		09889 A		09890 A		09891 A		09892 A	
Location	100		Columbia Composite		Robalo Composite		Robalo Composite		Norpak Composite	
Percent Solid	100		100		100		100		100	
Analyte	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg
Aroclor 1016	U	0.04	U	830	U	1300	U	130	U	4.2
Aroclor 1221	U	0.08	U	1700	U	2500	U	270	U	8.3
Aroclor 1232	U	0.04	U	830	U	1300	U	130	U	4.2
Aroclor 1242	U	0.04	U	830	U	1300	U	130	U	4.2
Aroclor 1248	U	0.04	4500	830	5200	1300	360	130	16	4.2
Aroclor 1254	U	0.04	15000	830	16000	1300	2500	130	81	4.2
Aroclor 1260	U	0.04	U	830	U	1300	U	130	U	4.2

Client ID	09894 A		09895 A		09896 A		09897 A		09898 A	
Location	Chip 1 Top		Chip 1 Bottom		Chip 2 Top		Chip 2 Bottom		Chip 3 Top	
Percent Solid	100		100		100		100		100	
Analyte	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg
Aroclor 1016	U	4200	U	4200	U	83	U	4.2	U	83
Aroclor 1221	U	8300	U	8300	U	170	U	8.3	U	170
Aroclor 1232	U	4200	U	4200	U	83	U	4.2	U	83
Aroclor 1242	U	4200	U	4200	U	83	U	4.2	U	83
Aroclor 1248	21000	4200	19000	4200	190	83	42	4.2	400	83
Aroclor 1254	57000	4200	41000	4200	590	83	81	4.2	870	83
Aroclor 1260	U	4200	U	4200	U	83	U	4.2	U	83

Table 1.2 (Cont) Results of the Analysis for PCBs in Dust  
WA # 2-262 Cornell Dubiller Electronics  
Based on dry weight

Client ID Location Percent Solid Analyte	02343 A Chip 3 Bottom 100		02344 A Chip 4 Top 100		02345 A Chip 4 Bottom 100		02346 A Chip 5 Top 100		02347 A Chip 5 Bottom 100	
	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg
Aroclor 1016	U	83	U	1700	U	2100	U	42	U	17
Aroclor 1221	U	170	U	3300	U	4200	U	83	U	33
Aroclor 1232	U	83	U	1700	U	2100	U	42	U	17
Aroclor 1242	U	83	U	1700	U	2100	U	42	U	17
Aroclor 1248	320	83	28000	1700	31000	2100	150	42	94	17
Aroclor 1254	530	83	17000	1700	15000	2100	200	42	100	17
Aroclor 1260	U	83	U	1700	U	2100	U	42	U	17

Client ID Location Percent Solid Analyte	02348 A Chip 6 Top 100		02349 A Chip 6 Bottom 100		02350 B Chip 7 Top 100		02351 A Chip 7 Bottom 100	
	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg	Conc. mg/kg	MDL mg/kg
Aroclor 1016	U	170	U	83	U	6.1	U	17
Aroclor 1221	U	330	U	170	U	12	U	33
Aroclor 1232	U	170	U	83	U	6.1	U	17
Aroclor 1242	U	170	U	83	U	6.1	U	17
Aroclor 1248	1800	170	540	83	23	6.1	48	17
Aroclor 1254	1000	170	250	83	73	6.1	58	17
Aroclor 1260	U	170	U	83	U	6.1	U	17

Table 1.3 Results of the Analysis for Lead and Cadmium in Air  
WA # 2-262 Cornell Dubilier Electronics

Parameter: Analysis method:		Volume	Cadmium AA-furnace		Cadmium AA-furnace		Lead AA-furnace		Lead AA-furnace	
		(L)	Conc µg/m³	DL µg/m³	Conc µg/filter	DL µg/filter	Conc µg/m³	DL µg/m³	Conc µg/filter	DL µg/filter
Client ID	Location									
00331	Columbia/Back Storage	960	0.054	0.0052	-	-	0.971	0.052	-	-
00333	Columbia/Shelf Mid Work area	960	0.037	0.0052	-	-	0.578	0.052	-	-
00335	Columbia/3rd Mid Bench Shelf	960	0.021	0.0052	-	-	0.117	0.052	-	-
00337	Columbia/Storage Bin by Break Room	960	0.011	0.0052	-	-	0.115	0.052	-	-
00339	Columbia/Back Room Work Bench	960	0.013	0.0052	-	-	0.354	0.052	-	-
00341	Columbia/Pole 20 Back Room	960	0.008	0.0052	-	-	0.253	0.052	-	-
00343	Robalo/Pole Near Breaker	960	0.017	0.0052	-	-	0.417	0.052	-	-
00345	Robalo/Shelf Inside Bay Door	960	0.007	0.0052	-	-	0.185	0.052	-	-
00347	Truck Fence	912	0.005	0.0055	-	-	0.134	0.055	-	-
00349	Roadway Corner	960	0.002	0.0052	-	-	0.083	0.052	-	-
09553	Field Blank	-	-	-	U	0.005	-	-	0.100	0.050
09555	Lot Blank	-	-	-	U	0.005	-	-	0.073	0.050

Table 1.4 Results of the Analysis for Lead and Cadmium in Dust  
WA # 2-262 Cornell Dubilier Electronics  
Based on dry weight

Parameter:		% Solids	Lead		Cadmium	
Client ID	Location		Conc mg/kg	MDL mg/kg	Conc mg/kg	MDL mg/kg
B 09889	Columbia Composite	97	3800	37	130	5.4
B 09890	Robalo Composite	96	2600	32	120	24
B 09891	Robalo Composite	97	1500	6.3	24	4.6
B 09892	Norpak Composite	98	1700	6.8	44	5.0
B 09894	Chip 1 - Top	96	1000	5.6	U	4.1
B 09895	Chip 1 - Bottom	96	68	6.4	U	4.6
B 09896	Chip 2 - Top	99	360	5.8	U	4.2
B 09897	Chip 2 - Bottom	98	48	5.3	U	3.9
B 09898	Chip 3 - Top	97	71	4.7	U	3.5
B 02343	Chip 3 - Bottom	98	33	6.9	U	5.1
B 02344	Chip 4 - Top	95	100	7.4	9.4	5.4
B 02345	Chip 4 - Bottom	96	22	5.4	U	3.9
B 02346	Chip 5 - Top	97	39	5.9	U	4.3
B 02347	Chip 5 - Bottom	95	24	8.1	U	5.9
B 02348	Chip 6 - Top	99	190	4.4	U	3.2
B 02349	Chip 6 - Bottom	98	16	4.6	U	3.4
B 02350	Chip 7 - Top	97	100	7.4	U	5.4
B 02351	Chip 7 - Bottom	97	40	6.0	U	4.4
Method Blank		NA	U	7.1	U	5.2



#### QA/QC for PCBs

Each air sample was spiked with a solution of tetrachloro-m-xylene and decachlorobiphenyl as surrogates. Percent recoveries ranged from 78 to 152 and are listed in Table 2.1. Twenty-nine out of thirty values were within the advisory QC limits.

Sample 500 was chosen for the matrix spike/matrix spike duplicate (MS/MSD) analyses for the air samples. The percent recoveries were 80 and 83 and are listed in Table 2.2. The relative percent difference (RPD), also listed in Table 2.2, was 3. QC limits are not available for this analysis.

Each dust sample was spiked with a solution of tetrachloro-m-xylene and decachlorobiphenyl as surrogates. Percent recoveries, listed in Table 2.3, ranged from 100 to 117. Both reported values were within the acceptable QC limits. Thirty-six other values were from diluted samples and the percent recovery could not be calculated.

Table 2.1 Results of the Surrogate Recoveries  
for PCBs in Air  
WA # 2-262 Cornell Dubilier Electronics

Sample ID	Percent Recovery	
	TCMX	DCBP
PBLK06069701	81	126
500	91	132
500 MS	103	137
500 MSD	79	131
489	87	130
490	87	130
491	99	143
492	78	114
493	94	134
494	87	126
495	84	119
496	88	120
497	104	137
498	103	144
499	109	152 *

TCMX denotes Tetrachloro-m-xylene  
DCBP denotes Decachlorobiphenyl

	Advisory
	QC
TCMX	Limits
DCBP	60-150
	60-150

Table 2.2 Results of the MS/MSD Analysis for PCB in Air  
WA # 2-262 Cornell Dubilier Electronics  
based on dry weight

Sample ID	Sample Conc (ng)	MS Spike Added (ng)	MS Conc (ng)	MS % Rec	MSD Spike Added (ng)	MSD Conc (ng)	MSD % Rec	RPD %
500	U	1000	826	83	1000	804	80	3

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**Table 2.3 Results of the Surrogate Recoveries  
for PCBs in Dust  
WA # 2-262 Cornell Dubilier Electronics**

Sample ID	Percent Recovery	
	TCMX	DCBP
SBLK06119701	100	117
09889 A	D	D
09890 A	D	D
09891 A	D	D
09892 A	D	D
09894 A	D	D
09895 A	D	D
09896 A	D	D
09897 A	D	D
09898 A	D	D
02343 A	D	D
02344 A	D	D
02345 A	D	D
02346 A	D	D
02347 A	D	D
02348 A	D	D
02349 A	D	D
02350 B	D	D
02351 A	D	D

TCMX denotes Tetrachloro-m-xylene  
DCBP denotes Decachlorobiphenyl

	Advisory
	QC
	Limits
TCMX	60-150
DCBP	60-150

#### QA/QC for Lead and Cadmium in Air

QC standards TMMA #1 were used to check the accuracy of the calibration curve. The percent recoveries ranged from 92 to 101 and all recovered concentrations were within the 95% confidence limits. The recoveries are listed in Table 2.4.

A NIST standard was also analyzed. The percent recoveries, listed in Table 2.5, were 95 and 100. The 95% confidence limits are not available for this analysis.

The percent recoveries of the media spike/media spike duplicate (MS/MSD) analyses, listed in Table 2.6, ranged from 87 to 98. The relative percent differences (RPDs), also listed in Table 2.6, were 2 and 12. All four percent recoveries and both RPDs were within the recommended QC limits.

The percent recoveries of the reagent spike, listed in Table 2.7, were 96 and 103. Both percent recoveries were within the recommended QC limits.

Table 2.4 Results of the QC Standard Analysis for Lead and Cadmium (Air )  
WA # 2-262 Cornell Dubilier Electronics

Metal	Date Analyzed	Quality Control Standard	Conc. Rec $\mu\text{g/L}$	True Value $\mu\text{g/L}$	95 % Confidence Interval	% Rec
Cadmium	06/11/97	TMAA#1	4.62	5.00	4.10 - 5.83	92
Lead	06/10/97	TMAA#1	50.6	50.0	43.4 - 56.3	101

Table 2.5 Results of the Laboratory Control Standard Analysis for Lead and Cadmium (Air  
WA # 2-262 Cornell Dubilier Electronics

Metal	Date Analyzed	Quality Control Standard	Conc. Rec. µg/Filter	True Value µg/Filter	95 % Confidence Interval	% Rec
Cadmium	06/11/97	NIST Std	0.918	0.97	NA	95
Lead	06/10/97	NIST Std	7.45	7.44	NA	100

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Table 2.6 Results of the Media Spike/Media Spike Duplicate (MS/MSD) Analysis for Lead and Cadmium (Air)  
WA # 2-262 Cornell Dubilier Electronics

Metal	Sample Conc. µg/filter	Spiked Spike µg/filter	Conc. Dup. µg/filter	Recovered Conc.		% Recovery		RPD	Recommended Limit	
				Spike µg/filter	Dup. µg/filter	Spike ug/filter	Dup. ug/filter		% Rec	RPD (Advisory Only)
Cadmium	0.003	1.00	1.00	0.960	0.980	96	98	2	75-125	20
Lead	0.073	1.00	1.00	1.045	0.938	97	87	12	75-125	20



Table 2.7 Results of the Reagent Blank Spike Analysis for Lead and Cadmium (Air)  
WA # 2-262 Cornell Dubilier Electronics

Metal	Reagent Spiked Conc µg/L	Reagent Blank Conc ug/L	Reagent Rec Conc ug/L	% Rec	Recommended Limit  (Advisory Only)
Cadmium	40	0.04	38.3	96	75-125
Lead	40	0.2	41.5	103	75-125

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#### QA/QC for Lead and Cadmium in Dust

The percent recoveries of the laboratory control standard, listed in Table 2.8, were 92 and 96. Both percent recoveries were within the recommended QC limits.

Sample B 09889 was chosen for the duplicate analysis. The relative percent differences, listed in Table 2.9, were 1 and 14 and both results were within the acceptable QC limits.

The percent recovery of the matrix spike (MS) analysis, listed in Table 2.10, ranged was 92. One other percent recovery was not calculated because of matrix interference. The calculated percent recovery was within the acceptable QC limits.

Table 2.8 Results of the Analysis of the  
Laboratory Control Standard  
for Lead and Cadmium in Dust  
WA # 2-262 Cornell Dubilier Electronics

Metal	Spiked Conc mg/kg	Rec Conc mg/kg	% Rec	Recommended Limit
Cadmium	50	46	92	80-120
Lead	50	48	96	80-120

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Table 2.9 Results of the Duplicate Analysis  
for Lead and Cadmium in Dust  
WA # 2-262 Cornell Dubilier Electronics  
(based on dry weight)

Metal	Sample ID	Initial Analysis mg/kg	Duplicate Analysis mg/kg	RPD	QC Limit
Cadmium	B 09889	133.92	153.36	14	20
Lead	B 09889	3765.97	3735.30	1	20

Table 2.10 Results of the Matrix Spike Analysis  
for Lead and Cadmium in Dust  
WA # 2-262 Cornell Dubilier Electronics  
(based on dry weight)

Metal	Sample ID	Sample Conc mg/kg	Spike Conc mg/kg	Rec Conc mg/kg	% Rec	QC Limits
Cadmium	B 09889	133.92	7.24	107	NC	80-120
Lead	B 09889	3765.97	98.82	3857.02	92	80-120

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Roy F. Weston, Inc.  
GSA Ramtan Depot  
Building 209 Annex (Bay F)  
2890 Woodbridge Avenue  
Edison, New Jersey 08837-3679  
908-321-4200 • Fax 908-494-402

Kiber Environmental Services  
3786 Dekalb Technology Parkway, N.E.  
Atlanta, GA 30340

Attn: Denise Ward

12 June 1997

Project # 3347-142-001-2262 Cornell Dubilier

As per Weston REAC Purchase Order number 81306, please analyze samples according to the following parameters:

Analysis/Method	Matrix	# of samples
Pb & Cd/ SW-846-6010 or Series 7000	Concrete Chips	18
Data package: see attached Deliverables Requirements		

Samples are expected to arrive at your laboratory on June 13, 1997. All applicable QA/QC analysis as per method, will be performed on our sample matrix. Preliminary sample result tables plus a signed copy of our Chain of Custody must be faxed to REAC 7 business days after receipt of the samples. The complete data package is due 21 business days after receipt of the samples. The complete data package must include all items on the deliverables checklist.

Please submit all reports and technical questions concerning this project to John Johnson at (908) 321-4248 or fax to (908) 494-4020. Any contractual question, please call Cynthia Davison at (908) 321-4296.

Thank you

Sincerely,

*Misty Barkley*

Misty Barkley

Data Validation and Report Writing Group Leader  
Roy F. Weston, Inc. / REAC Project

MB:jj Attachments

cc. R. Singhvi  
S. Burchette  
2262\non\ncm\9706\sub\2262Con1

V. Kansal  
Subcontracting File  
Y. Exume

C. Davison  
K. Robbins  
M. Barkley

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Click to WESTON On The Web <http://www.rfweston.com>



REAC: Son, NJ  
(908) 321-4200  
EPA Contract 68-C4-0022

# CH<sub>4</sub> JF CUSTODY RECORD

Project Name: CORNELL DUBLER  
Project Number: 03347-102-001-2262-01  
RFW Contact: K. ROBBINS Phone: 321-4200

No: 08342

SHEET NO. 1 OF 1

060697

## Sample Identification

## Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Pb+Cd	VOLUME (L)
501	00331	COLUMBIA / BACK ROOM	A	6/5/97	1	CASSERIE / WHIRLAK	✓	960
502	00333	COLUMBIA / SHELF INSIDE	A	6/5/97	1		✓	960
503	00335	COLUMBIA / BACK ROOM	A	6/5/97	1		✓	960
504	00337	COLUMBIA / BACK ROOM	A	6/5/97	1		✓	960
505	00339	COLUMBIA / BACK ROOM	A	6/5/97	1		✓	960
506	00341	COLUMBIA / BACK ROOM	A	6/5/97	1		✓	960
507	00343	ROBACO / BREAKER	A	6/5/97	1		✓	960
508	00345	ROBACO / SHELF INSIDE	A	6/5/97	1		✓	960
509	00347	TRUCK FENCING	A	6/5/97	1		✓	912
510	00349	ROADWAY CORNER	A	6/5/97	1		✓	960
511	09553	FIELD BLANK	A	6/5/97	1		✓	0
512	09555	LOT / MS / MSD	A	6/5/97	3		✓	0

### Matrix:

SD -	Sediment	PW -	Potable Water	S -	Soil
DS -	Drum Solids	GW -	Groundwater	W -	Water
DL -	Drum Liquids	SW -	Surface Water	O -	Oil
X -	Other	SL -	Sludge	A -	Air

### Special Instructions:

(L) - LITERS

MS/MSD - MEDIA SKE / MEDIA SPIKE DUPLICATE

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
ALL ANALYSIS	John Sell	6/6/97	Y. EXUME	6/4/97	10:30	ALL ANALYSIS	Y. EXUME	4/4/97	Dominic Kukulsky	6/6/97	11:30

REAC, Son, NJ

(908) 321-4200

EPA Contract 68-C4-0022

## CHART OF CUSTODY RECORD

Project Name: CORNELL PUBLISHER

Project Number: 03347-142-C01-2262-01

RFW Contact: L. Robb, Jr. Phone: 321-4200

No: 08343

SHEET NO. 1 OF 1

060697

## Sample Identification

### Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCB's	VOLUME (L)
489	00332	CELL M31A / SHELF N-2	A	6/5/97	1	WHOLE PAK / NONE	✓	960
490	00334	CELL M31A / SHELF N-2			1		✓	960
491	00336	CELL M31A / SHELF N-2			1		✓	960
492	00338	CELL M31A / SHELF N-2			1		✓	1080
493	00340	CELL M31A / SHELF N-2			1		✓	960
494	00342	CELL M31A / SHELF N-2			1		✓	960
495	00344	ROAD / BREAKER			1		✓	960
496	00346	ROAD / BREAKER			1		✓	960
497	00348	TRUCK FENCE LINE			1		✓	960
498	00350	ROADWAY CORNER			1		✓	960
499	09554	FIELD BLANK			1		✓	0
500	09556	LOT / MS / MSD			3		✓	0

**Matrix:**

SD - Sediment  
DS - Drum Solids  
DL - Drum Liquids  
X - Other

PW - Potable Water  
GW - Groundwater  
SW - Surface Water  
SL - Sludge

S - Soil  
W - Water  
O - Oil  
A - Air

**Special Instructions:**

(L) - LITERS  
MS/MSD - MEDIA SPK  
MEDIA SPK PUBLICATIONS

**FOR SUBCONTRACTING USE ONLY**

**FROM CHAIN OF  
CUSTODY #**

[illegible]



REAC, son, NJ  
(908) 321-4200  
EPA Contract 68-C4-0022

CH. OF CUSTODY RECORD  
Project Name: CORNELL DUBILIER  
Project Number: 03347-142-001-2262-01  
RFW Contact: Ken Robbins Phone: 908 321-4298

No: 03968

SHEET NO. 1 OF 1

706014-2532

### Sample Identification

### Analyses Requested

REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	Pb	Cd		
1	309889	Columbia Composite	X-1	6/9/97		8-03 Poly/Ice	✓	✓		
2	309890	Robalo Composite					✓	✓		
3	309891	Robalo Composite					✓	✓		
4	309892	Norfolk Composite					✓	✓		
5	309894	Chip 1 - Top	X-2			4-03 Glass/Ice	✓	✓		
6	309895	Chip 1 - Bottom					✓	✓		
7	309896	Chip 2 - Top					✓	✓		
8	309897	Chip 2 - Bottom					✓	✓		
9	309898	Chip 3 - Top					✓	✓		
10	302343	Chip 3 - Bottom					✓	✓		
11	302344	Chip 4 - Top					✓	✓		
12	302345	Chip 4 - Bottom					✓	✓		
13	302346	Chip 5 - Top					✓	✓		
14	302347	Chip 5 - Bottom					✓	✓		
15	302348	Chip 6 - Top					✓	✓		
16	302349	Chip 6 - Bottom					✓	✓		
17	302350	Chip 7 - Top				32-03 Glass/Ice	✓	✓		
18	302351	Chip 7 - Bottom	Y							

#### Matrix:

SD - Sediment	PW - Potable Water	S - Soil
DS - Drum Solids	GW - Groundwater	W - Water
DL - Drum Liquids	SW - Surface Water	O - Oil
X - Other	SL - Sludge	A - Air

#### Special Instructions:

X-1 - Vacuum Dust  
X-2 - Concrete Chip Dust

Acid at 6.0°C

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF  
CUSTODY # 08400

Item/Reason	Relinquished By	Date	Received By	Date	Time	Item/Reason	Relinquished By	Date	Received By	Date	Time
At/Analys	M. Trespedio	6/12/97	Dubiel	6/13/97	0930						

REAC, Son, NJ  
(908) 321-4200  
EPA Contract 68-C4-0022

# CHAIN OF CUSTODY RECORD

Project Name: Coswell Dredger  
Project Number: 03347-142-001-2262-01  
REW Contact: K. Robbins Phone: 4298

No: 08400

SHEET NO. 1 OF 1

Sample Identification						Analyses Requested			
REAC #	Sample No.	Sampling Location	Matrix	Date Collected	# of Bottles	Container/Preservative	PCBS	Pb, Cd	
723	0985 AB	Remedial Sample	X (1)	6/9/97	1	glass jar / None	✓	✓	<div style="position: relative; height: 100px;"> <span style="position: absolute; top: 0; right: 0; font-size: 2em;">X</span> </div>
724	09890 AB	Remedial Sample	X (1)	6/9/97	1				
725	09891 AB	Remedial Sample	X (1)		1				
726	09892 AB	Remedial Sample	X (1)		1				
727	02351 BA	Chip 1 Top	X (2)		1				
728	09895 BA	Chip 4 Bottom	X (2)		1				
729	09896 BA	Chip 2 Top	X (2)		1				
730	09897 BA	Chip 2 Bottom	X (2)		1				
731	09898 BA	Chip 3 Top	X (2)		1				
732	02343 BA	Chip 3 Bottom	X (2)		1				
733	02344 BA	Chip 4 Top	X (2)		1				
734	02345 BA	Chip 4 Bottom	X (2)		1				
735	02346 BA	Chip 5 Top	X (2)		1				
736	02347 BA	Chip 5 Bottom	X (2)		1				
737	02348 BA	Chip 6 Top	X (2)		1				
738	02349 BA	Chip 6 Bottom	X (2)		1				
739	02350 BA	Chip 7 Top	X (2)		1				
740	02351 BA	Chip 7 Bottom	X (2)	6/9/97	1	glass jar / None	✓	✓	

Matrix:  
SD - Sediment PW - Potable Water S - Soil  
DS - Drum Solids GW - Groundwater W - Water  
DL - Drum Liquids SW - Surface Water O - Oil  
X - Other - Vacuum Dust (1) SL - Sludge A - Air

Special Instructions:

FOR SUBCONTRACTING USE ONLY

FROM CHAIN OF CUSTODY #

PCB analysis for Dust Samples

Items/Reason	Relinquished By	Date	Received By	Date	Time	Items/Reason	Relinquished By	Date	Received By	Date	Time
all / Analysis 18	Ken Roby	6/9/97	Y. EXUME	6/11/97	10:00	ALL ANALYSIS	Y. EXUME	6/11/97	Y. EXUME	6/11/97	11:00 AM
			Y. EXUME	6/11/97	10:00	XRF Pb, Cd	Y. EXUME	6/11/97	Y. EXUME	6/11/97	11:00 AM